DOCUMENT RESUME

ED 457 339 CE 082 343

AUTHOR	Childress, Vincent; Newman, Jeffery L.; Parker, Whitney D.
TITLE	Technology Education as a Career. Teacher Instructional Materials and Activities for High School Technology Education.
INSTITUTION	Council on Technology Teacher Education, Reston, VA.
SPONS AGENCY	Technical Foundation of America, Glen Ellyn, IL.
PUB DATE	2000-00-00
NOTE	28p.
AVAILABLE FROM	For full text: http://teched.edtl.vt.edu/ctte/tecareers/TechEdAsACareer.pdf .
PUB TYPE	Guides - Classroom - Learner (051) -- Guides - Classroom - Teacher (052)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Career Choice; *Career Education; Classroom Techniques; High Schools; Learning Activities; *Learning Modules; Lesson Plans; *Occupational Aspiration; Occupational Information; Teacher Education; Teaching Methods; Technical Education; *Technology Education; Vocational Education; *Vocational Education Teachers; *World Wide Web

ABSTRACT

This lesson plan and learning activities were designed for high school technology education teachers to use in assisting students in making informed decisions regarding a career in technology education. The following materials are included in the packet: (1) the lesson description (three learning objectives and advice to the teacher); (2) the lesson plan outline for "Technology Education as a Career," including goals, a resource list, a supply list, a section called "Review and Focus," step-by-step directions for the teacher's presentation, suggestions for student practice, a mediated activity, a list of what students should learn, and evaluation instructions; (3) the "World Wide Web Technology Education Career Activity" and answer sheet that support the lesson; (4) three overhead transparencies that support the lesson; (5) a recruitment brochure; and (6) a prerequisite lesson plan and overhead transparency for students who have never searched the World Wide Web. (KC)

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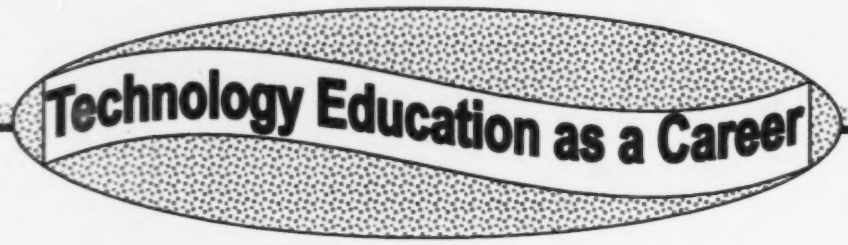

Technology Education as a Career

Teacher Instructional Materials and Activities for High School Technology Education

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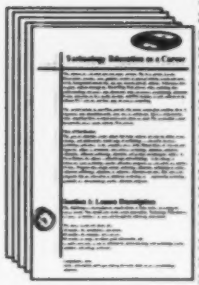
Technology Education as a Career

Introduction

In the foreseeable future, there will be an acute shortage of technology education teachers. Research has shown that the high school technology education teacher is one of the most important influences in a student's decision to become a technology education teacher. *Technology Education as a Career* provides a means for you, the high school teacher, to continue this influence and assist students in making informed decisions regarding a career in technology education.



The materials include:

- The Lesson Description and Lesson Plan outline entitled *Technology Education as a Career*,
- The *World Wide Web Technology Education Career Activity* and answer sheet that support the lesson,
- Three color overhead transparencies that support the lesson,
- A recruitment brochure, and if you need them
- A prerequisite lesson plan and overhead transparency if your students have never searched the World Wide Web, and you believe that they need the extra instruction.

The lesson should fit well with technology education career planning competencies within the curricula of most states and in countries around the world. This unit would also make a good Technology Student Association (TSA) activity or a module for programmed instruction.

Acknowledgments

Technology Education as a Career was developed by the Council on Technology Teacher Education, an affiliate council of the International Technology Education Association, with funding from the Technical Foundation of America.

Technology Education as a Career was developed at North Carolina A&T State University, Greensboro, North Carolina by Dr. Vincent Childress, Project Director, and Mr. Jeffery L. Newman and Mr. Whitney D. Parker, Graduate Assistants.

The developers would like to recognize and thank the following educators for their professional review of *Technology Education as a Career*:

Dr. Walter F. Deal	Associate Professor, Occupational and Technical Studies, Old Dominion University, Norfolk, Virginia
Dr. James E. LaPorte	Associate Professor, Technology Education, Virginia Tech, Blacksburg, Virginia
Dr. Richard E. Peterson	Associate Professor, Technology Education, North Carolina State University, Raleigh, North Carolina
Dr. Michael L. Scott	Associate Professor, Technology Education, The Ohio State University, Columbus, Ohio
Ms. Tiffany Thomas	Teacher, Technology Education, Dudley High School, Greensboro, North Carolina

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Technology Education as a Career

This document is divided into two major sections. The first section, Lesson Description, provides some guidance on how to proceed with the lesson and some of the background content that you may want to provide students. Its main purpose is to help you teach about careers related to technology education. It also discusses how to guide students through the *World Wide Web Technology Education Career Activity*. **If your students do not have Internet access, you can still conveniently teach the career lesson using the *College Blue Book* as your resource** (or similar reference) instead of the World Wide Web. The lesson and Web activity may also prove to be useful interfaces with the Technology Student Association (TSA) because they lead students to the official TSA Web site and reference is made to TSA throughout the unit. If you are a middle school teacher, then you may consider adapting the lesson and activity to better suit the needs of middle school students by focusing on concepts more generally.

The second section, Lesson Plan, provides the career lesson plan in outline form. It organizes your instruction in the same way as section one, but it is written in the more simplified form typical of most lesson plans. The lesson plan is used to teach the career lesson and may be used to introduce the Web activity.

Note of Clarification
The general education school subject that helps students develop the ability to use, manage, and understand a broad range of technology is referred to herein as *technology education*. At the secondary level, in the United States of America and Japan the subject is commonly referred to as technology education, industrial education, industrial technology education, and sometimes technological studies. In Great Britain and Australia, the subject is called design and technology. At the college or university level, *technology teacher education* programs are referred to in a number of ways. Program titles might include technology education, technological studies, industrial technology education, or industrial education and more. But, university programs that are referred to as *industrial technology* or *…engineering technology* generally are not technology teacher education programs.

Section 1: Lesson Description

The following is a description of considerations to make before presenting the career lesson. You should refer to the Lesson Plan outline, *Technology Education as a Career*, in Section 2, page 8, as you read through the following information.

The estimated time for elements of the career lesson are:
40 minutes for career instruction,
40 minutes for computer skills review if necessary,
80 minutes or longer for students to collect useful information, and
as much extra time as can be afforded for communicating with technology teacher educators and college professors.

Goal
Begin making decisions about careers in technology education.

Lesson Description

Objectives

I. Gather information about teaching technology education and related careers.
II. Identify the courses and activities that college students complete in preparation to become technology education teachers.
III. For students who are *seriously* considering enrolling in a program, make contact with professors at technology teacher education programs of interest and develop a dialogue with them.

Objective I

Gather information about teaching technology education and related careers.

A. Background on Technology Teachers

Teaching styles and students' abilities to learn vary widely. The amount of time it takes to introduce a lesson and still maintain student interest and motivation also varies from one classroom to another. For the career lesson, it may be feasible to discuss some or all of the items in this portion of the lesson, but to some students the benefits of being a technology education teacher may be obvious.

It is important to emphasize the projected shortage of technology education teachers. While there are currently around 37,968 technology teachers in the US, Weston (1997) projected that an *additional* 13,089 technology teachers will be needed by 2001. The shortage of teachers is due to several reasons including:

- expanding middle school and high school programs
- large number of technology teachers nearing retirement, and
- reduced number of technology teacher education programs.

The most important part of the background information under this section is emphasizing the need to increase participation by women and minorities in technology education. The profession needs to capitalize on any opportunity to assure women and minorities that technology education is a profession that needs their contributions.

B. Careers Open to Technology Teachers

With the assistance of the overhead transparency, Careers through Technology Education, explain the duties of technology teachers and emphasize the fun they have working with students and technologies. Also emphasize that teachers have the opportunity to move into different roles in the profession such as becoming a supervisor or teacher educator.

For years, many graduates of technology teacher education programs have chosen to pursue careers in business, industry, and the military. It will be worth your time to highlight some of the career examples provided in the lesson plan. Some students will already know that they do not want to teach. The listed careers will communicate that technology teacher education programs are good choices for college enrollment.

Lesson Description

C. Educational Routes to Becoming a Technology Education Teacher

With the assistance of the overhead transparency, Educational Routes, you can make sure that students understand that while technology education teachers must have an undergraduate degree (and in some cases, a master's degree), it is not uncommon for students to enroll in community college or junior college prior to transferring to programs at four-year universities. Often community college students will take technical courses and some general studies courses and will transfer those credits to the technology teacher education program, but they must be college transfer courses. Students might also consider a minor. Students need to understand that most technology teacher education programs divide the curriculum into four components:

- General education courses such as composition, mathematics, science, etc.;
- Professional courses such as teaching methods;
- Technological courses such as production, transportation, and communication systems; and
- Clinical or field experience such as internships and student teaching.

The technological courses are the ones to which your students can most relate, and they are typically the ones that are emphasized at technology teacher education Web sites. The Web activity will emphasize this aspect of technology teacher education. Students will also be interested in the Technology Education Collegiate Association (TECA). Its mission and purpose are similar to TSA. Many programs have TECA chapters and Web pages that highlight chapter activities.

Students also should be made aware that different universities have different admissions requirements. Many technology teacher education Web sites provide links to university admissions Web sites or list admissions requirements directly on their own sites. The *College Blue Book* (or similar reference) may also be useful.

Today, people are changing jobs more frequently than in the past. Some of your students' parents may be looking for a career change. Because many educational agencies are allowing technology teachers to enter the profession without a teaching license or certificate, it may be worth mentioning to your students. Adults with undergraduate degrees related to technology may enroll in technology teacher education programs to work toward a teaching license while they teach.

Objective II

Identify the courses and activities that college students complete in preparation to become technology education teachers.

A. Using the *College Blue Book*

Gaining Internet access may be a problem for some programs. For students who do not have Internet access, technology teacher education programs can be located using the *College Blue Book* (or similar reference if outside the United States). This multi-volume reference set will allow you to determine whether or not particular colleges and universities offer bachelor degrees in technology education. The student

Lesson Description

can obtain the address of the college or university and get in touch with the technology education professor. The *College Blue Book* also lists information on admissions and financial aid by university.

Note: If students have Internet access at home or at the library, you may assign this lesson as a homework assignment. For programs where the teacher has Internet access but the students do not, the teacher may want to use the Web activity to gather college information. He or she may then provide further instruction for students about technology teacher education programs. Otherwise, programs without Internet access may skip to Objective III.

B. Explaining the World Wide Web Activity

Within the *World Wide Web Technology Education Career Activity* materials (Electronic Scavenger Hunt), students will be presented with the problem of identifying technology teacher education programs over the Web. They are prompted to consider keyword phrases in order to develop efficient searches on the search engines that they choose. Some students may need a structured session or some teacher guidance for brainstorming and deducing plausible search terms. This may be important because it is very easy to surf the Web for technology education topics and get results that actually relate to educational technology, instructional technology and a variety of industrial technology Web sites that provide information not related to teaching at all. Other than brainstorming search terms, the Web activity is self-contained.

The students will hopefully be able to self-mediate their strategies in terms of searching, understanding what is found, and reaching conclusions about technology education as a career based on their findings.

C. Using Search Engines to Gather Information

Based on the type of information your students anticipate gathering, keywords and keyword phrases need to be identified.

D. Browsing the Web through Hyperlinks to Gather Information

Related Web sites will often be hyper-linked, meaning one can navigate easily among sites. Technology teacher education sites are no exception. You will find that several university programs will be linked together and that many of these programs will be linked to Web "hubs" that are operated by an association. These Web pages provide links to all of their member institutions. One such Web page is maintained by the International Technology Education Association. (Teachers should locate this page in advance.) The "ITEA Institutional Members" Web page provides links to many technology teacher education programs and a link to information on the technology education teacher shortage, a real motivator to a student who is deciding on a career teaching technology education. The ITEA site is also linked to the CTTE web site, which may also be helpful. It also identifies technology teacher education programs that are accredited by NCATE.

Lesson Description

You may want to see if students are able to find this Web page on their own. The ITEA Web site provides a good example of another search strategy to consider, site directories. Many Web sites provide directories that make relevant pages easy to find. Once students have identified the ITEA Web site as a possible source of information, the "ITEA Institutional Members" Web page is most easily found through the site directory feature. At the time these materials were under development, the ITEA site directory referred to this Web page as "Where to Get a Degree." The TSA maintains a similar Web page on their site. Follow the "Careers" link and the "To be a Teacher" link. (Teachers should locate this page in advance.)

As part of the electronic scavenger hunt, the teacher might identify some graphic "treasure" on a Web site in advance of the lesson and have the students search out and locate the item as part of the assignment. For example, students might be told to locate an ITEA logo on the Web or locate the university seal of the teacher's *alma mater* on the Web.

Objective III
Make contact with professors at technology teacher education programs of interest and develop a dialogue with them. (Only for students who are *seriously* considering enrolling in a program.)

A. Making Contact
With the assistance of the overhead transparency, Ways to Contact Professors, briefly review different means for corresponding with professors at those technology teacher education programs of interest to your students.

If your students are corresponding through the mail and cannot afford postage, many civic organizations provide support for educational programs and may provide postage for your students.

B. Developing a Dialogue
It is most likely that students will be interested in becoming technology teachers because they have benefited from your classes and have enjoyed the learning activities that you have provided through the curriculum and TSA. If a student is serious about enrolling in a program, then he or she may contact a professor. Students' dialogues with the professor could include (1) questions about the program's courses and activities, (2) requests for program materials, (3) follow-up questions about admission if they have questions after contacting the admissions office, and (4) anything that will help the student to understand what it takes to become a technology teacher. Some information may not be addressed on a program's Web site such as articulation agreements with nearby junior or community colleges. Perhaps you have students that are interested in saving some money or developing their academic skills by going to community college first. The technology education professor can help to advise them to make good decisions especially in the selection of community college courses that will transfer into the technology teacher education program.

Lesson Description

Students *that decide to enroll* in a program could also develop partnerships with a *willing* professor or college student. As your students become involved in their courses and the Technology Student Association activities during the year, they can develop reports, desktop publications, electronic media, Web-based electronic portfolios, and their own Web sites, all of which they will want to share with the willing professor or college student in the partnership. These student products might be a natural outgrowth of TSA activities such as the Cyberspace competition, which requires students to develop Web pages on popular technological topics. Partner professors and college students will receive examples of your students' work and visit their portfolios and Web sites. Partners will want to see photographs of the work students entered in TSA competitions. Your students will feel very successful and will consider a career in technology education more seriously than if they had not established a dialogue with the professors.

Mediation and Student Understanding

Once students have acquired some simple search skills and a very basic understanding of what technology teacher education programs are, you will want them to build on their knowledge. The *World Wide Web Technology Education Career Activity* will help to guide your students toward these more robust concepts that will help them reach a decision about technology education as a career. While the activity material is a self-contained resource, ideal for use with modular or programmed instruction, students will likely require some assistance. To facilitate student learning, the teacher needs to monitor students as they answer questions and reach certain conclusions. Responding to student questions with a thoughtful question will take the student to a next level of understanding.

At about the point that students have gathered appropriate information from several teacher education Web sites or the *College Blue Book*, you will want to provide a lesson review. Focus especially on the content from the career lesson and information gathered from program Web sites.

You will likely agree that a review belongs at this point in the lesson because it does not take much class time to "wait" on information that one can see on a Web page or gather from a reference. However, for serious students, making personal contact and developing a meaningful dialogue with a professor will take time. You may want to set aside some time a couple of times each week for students to develop this dialogue and make entries.

Evaluate students on their understanding of the benefits of being a technology teacher, the responsibilities of the teacher, and the educational routes to becoming a technology teacher.

Finally, monitor student responses and logs as students are developing them. You will want to make sure that students are sufficiently elaborate in their responses. If they provide detailed responses, then they will end up with a resource they can actually use when they apply for admission to a university and when they try to contact a professor for more information. Elaborate responses will also do more to insure that you can reach a judgment as to the degree of understanding a student has reached.

Section 2: Lesson Plan

Technology Education as a Career

Goal: Begin making decisions about careers in technology education.

Note: This career lesson may be taught with or without computers and access to the Internet.

Audio/Visuals

Three overhead transparencies: Careers through Technology Education, Educational Routes, and Ways to Contact Professors

Resources

1. *College Blue Book*, college reference (or similar reference) available in your school library; or
2. In your lab, the school library, or school computer lab:
   - one computer if students are completing the *World Wide Web Technology Education Career Activity* as an independent study; or
   - one computer for each student or student pair if you are presenting the Web activity for use with the entire class.
   - The computer(s) should have a connection to the Internet and a Web browser to help you navigate among various Web sites.
3. Weston, S. (1997). Teacher shortage – Supply and demand. *The Technology Teacher, 57*(1), 6-9.

Supplies

One copy of *World Wide Web Technology Education Career Activity* and answer sheet per student if you have Internet access. Without Internet access, students will simply need to organize their notebooks.

Objectives

I. Gather information about teaching technology education and related careers.
II. Identify the courses and activities that college students complete in preparation to become technology education teachers.
III. Make contact with professors at technology teacher education programs of interest and develop a dialogue with them. (Only for students who are ***seriously*** considering enrolling in a program.)

Review & Focus

Relate the upcoming lesson and activity to other career awareness topics that have been discussed in the past. Ask some questions that sample the student's understanding of the related past instruction.

Explain that becoming a technology education teacher is equally important for your students to consider.

Teacher Presentation

I. Gather information about teaching technology education and about related careers.

A. Background on technology teachers.

1. Benefits of being a technology teacher.
   a. Have fun throughout their careers working with students and teaching technology.
   b. May have summers off to pursue other interests or work.
   c. Technology teachers are in high demand including women and minorities. It is projected that in the USA alone there will be a shortage of 13,089 technology education teachers by 2001 (See Weston, 1997).
   d. Depending on location, salaries are becoming more competitive with other careers.
   e. Many teachers receive excellent fringe benefits such as reduced rates on health insurance, 100% employer-paid retirement, and generous vacation time.

2. Women and minorities are underrepresented in technology education and are highly sought after for employment in the profession.

B. Careers open to technology education teachers. *Show overhead transparency entitled Careers through Technology Education.*
   1. Technology education teacher and TSA advisor.
      a. Have the opportunity to encourage and challenge students.
      b. Develop lessons that teach students about a broad range of technology, its use and management.
      c. Develop activities that interest students and help them find meaning in their educational experiences.
      d. Develop and manage students through a personnel system that safely controls the way students learn.
      e. Develop and manage the laboratory and equipment for safe, effective instruction.
      f. Evaluate student achievement to help students grow as technologically literate people.
      g. Provide leadership development and values through the Technology Student Association.
      h. Assist students in making career choices.
      i. Provide students with the opportunity to develop socially by helping them prepare for and participate in TSA competitions.
   2. Curriculum specialist or supervisor.
      a. Provide support for technology education programs through allocating funding, equipment, and supplies through grant writing and teacher training.
      b. Facilitate the development of curricula for all teachers to use with their students and help teachers improve their students' achievement.
      c. Facilitate the teacher's ability to understand and implement local and national laws and regulations that govern technology education.
      d. May secure employment at the local or state/provincial/national levels.
   3. Professor or teacher educator and TECA advisor.
      a. Teach college students about technology and how to teach technology to middle school and high school students and help students understand ways to train adults in business and industrial positions.
      b. Maintain labs and develop instruction and curricula much like the teacher and the supervisor.
      c. Conduct scientific and scholarly research about technology and how to learn about technology.
      d. Publish the results of research.
      e. Advise students on how to get teaching and/or industry jobs.
      f. Provide opportunities for students to grow professionally through the Technology Education Collegiate Association (TECA). Students compete with other universities much like students compete against other schools in TSA.
   4. Business and industry positions.
      a. Many students who want to get jobs in business and industry enroll in technology teacher education programs because of the breadth of knowledge they gain about technology, including:
         1) Communication and information systems
         2) Production, manufacturing, construction, and biotechnology systems
         3) Transportation and other physical technology systems
      b. Students who graduate from technology teacher education programs enter a variety of positions.
         1) Training and development
            a) Train workers and managers

b) Oversee the implementation of special projects for the company 10

2) Network administration
3) Web site and multimedia development
4) Graphic design
5) Printing management and production
6) Production management
7) Product design development
8) Information systems
9) Mechanical systems
10) Construction management
11) Construction estimating
12) Computer programming
13) Industrial sales
14) Telecommunications
15) Educational sales
16) Military training
17) Many other business and industry positions

C. Educational routes to becoming a technology teacher. *Show overhead transparency entitled Educational Routes.*
1. Technology education and TSA in high school.
2. Community college or junior college or a minor in technology education prior to a degree.
3. Four-year college or university and TECA.
4. Graduate study to become a master teacher, supervisor, or teacher educator.
5. Adults decide to teach technology education and TSA as a career change.

II. Identify the courses and activities that college students complete in preparation to become technology education teachers.

A. For students with no Internet access, use the *College Blue Book* to determine which colleges and universities offer bachelor degrees in technology education and addresses needed to write to technology teacher educators. Find admissions and financial aid information via admissions.

---***The remainder of Objective II is for students with Internet access.***---

B. Explaining the *World Wide Web Technology Education Career Activity* (Electronic Scavenger Hunt).
1. Types of information to gather.
- Identifying a university and its location.
- Differentiating between technology education programs and other similar sounding university programs.
- Identifying organizations like TECA, TSA, and ITEA.
- Identifying the types of activities and courses that technology education majors complete.
- Showing students how to bookmark good Web sites with their Web browsers.
- Determining how to contact professors at a university.
- Gathering admissions information.

2. How to use the activity guide.
- Clues and questions for searching and browsing.
- Mark the answer sheets only for questions and short responses.
- Keep a log of correspondence between you and a *willing* university professor or student.

C. Using search engines to gather information.
1. Search by keyword phrases and concepts.
2. Search by category such as geographic location.

D. Browsing the Web through hyperlinks to gather information.
1. Identify key Web sites with links to other colleges and universities.
2. Follow the links between universities and within Web sites.

---***The remainder of the lesson is for all students.***---

*III. Make contact with professors at technology teacher education programs of interest and develop a dialogue with them. (Only for students who are **seriously** considering enrolling in a program.)*

A. Making contact. *Show overhead transparency entitled Ways to Contact Professors.*
   1. Hard copy correspondence with professors.
   2. Electronic
      a. Email and attachments, form pages, and listservs.
      b. Using a closed forum or a private chat.

B. Developing a dialogue. If you are ***serious*** about enrolling in a program, ask the professors:
   1. Questions you have that will help you decide whether or not technology education is the career you would like;
   2. About technology activities that their college students do at the programs;
   3. About enrolling in their programs after you have visited the admissions Web site; and,
   4. If they are willing to correspond with you from time to time or have their students write.

Student Practice

Prior to letting students work independently, you may want to have all of your students access one Web site that is a good example of a site with complete information. You might also review how to send email, attach files to email, and set up exchanges of information over private, safe chats, or net meetings. If you do not have Internet access you may want to explain how to use the *College Blue Book*.

Mediated Student Activity

Explain to students how they will be evaluated on this activity. Students begin working through the *World Wide Web Technology Education Career Activity* or working with the *College Blue Book* if they do not have Internet access.

Student Knowledge

While they are locating and browsing Web sites, use questioning and observation to check to see that students understand: (Students could generate assessment questions as a class.)

1. What a technology teacher education program is.
2. What the activities are that the college students do in their technological courses.
3. How to contact professors.
4. How to get admissions information.

Monitor students who use the Web to make sure that they do not spend too much time at Web sites that are not productive. Use reasoning and dialogue to get students to improve their ability to search the Web and gather the information. After about 80 minutes of information gathering, review the skills students acquired and the career information they located. Explain that they will have time as a class to make contact with professors initially and they will also have some extra time over the next few weeks to maintain a discussion with the programs in which they are seriously interested. Monitor the development and growth of the student's dialogue with technology education professors through the student's log. Students without Internet access will need more time to develop well written letters and establish regular correspondence.

Evaluation

For the *electronic* scavenger hunt, evaluate students using the suggested scale:

25% Logical and complete answers to the Web activity sheets.
25% Teacher's observation of how well students conducted searches and located information (or how well students improved).
25% Student made electronic contact with a technology education university professor and secured admissions information.
25% Students' understanding of the career lesson as measured by a teacher-made written test.

For the *hard copy* scavenger hunt, evaluate students using the suggested scale:

50% Student made contact with a technology education university professor and secured admissions information.
50% Students' understanding of the career lesson as measured by a teacher-made written test.

World Wide Web Technology Education Career Activity

(Electronic Scavenger Hunt)

Technology Education around the World

This activity is going to help you learn more about becoming a technology teacher. In the United States and Japan, the school subject is called technology education, industrial education and sometimes industrial technology education. The subject area might be called something different depending on what country you are from. For example, in Great Britain and Australia, the same subject is called design and technology. To keep things simple, this activity will refer to the subject area as *technology education*.

Introduction

You should consider becoming a technology education teacher. Technology education teachers learn about teaching by earning a college degree. A *technology teacher education* program is a set of college level courses and activities that prepare you to become a technology education teacher. Some technology teacher education programs may also prepare students for employment in business and industry. To learn more about technology teacher education programs you will go on an "electronic scavenger hunt."

Notebook and Answer Sheet

Your teacher will not want you to write in this booklet, so keep a notebook or log for longer notes and use the answer sheet for short answers to questions in this activity.

Electronic Scavenger Hunt Missions

Using the World Wide Web, your electronic scavenger hunt missions are to:

- Identify several college programs that prepare technology education teachers.
- Get an idea of the types of activities and courses that college students take in technology education.
- Share your class work and have discussions with a university professor over the World Wide Web.

Day 1: Your First Mission
Using the World Wide Web, your first mission is to:

- Identify several college programs that prepare technology education teachers.

Problem 1
You know how to use a Web browser to navigate across the Web, but what are the best words to use in a search of the Web? What are the best locations to browse? Many college programs and student clubs sound like they are part of technology education, but they are not the same.

Solving Problem 1
At the college or university level, *technology teacher education* programs are referred to in a number of ways. Program titles might include technology education, technological studies, industrial technology education, or industrial education. But, university programs that are referred to as *industrial technology, engineering technology, educational technology, or instructional technology* generally are not technology teacher education programs.

Good Search Terms. There are several terms that will help you find your information. You should write these terms.

_____ _____
_____ _____
_____ _____

Confusing Terms. There are several terms that will make your searches confusing. You should write these terms.

_____ _____
_____ _____
_____ _____

Search 1.1: General Search
Use your Web browser to go to a search engine that will help you locate Web sites. When you search for a term on the Web, most search engines will tell you how many Web sites/pages contain the word you are looking for.

1. Search for the word *technology*. How many Web sites/pages did you find? _____

You might have found as many as two million Web pages with the word *technology*. You do not have time to look at that many Web sites.

2. Is there a way to limit the number of Web pages found? Couldn't you be more specific? How many Web pages do you find when you search for the words *technology education*? _____

   You might have found almost five million Web pages. You were more specific, but it did not help. When you input the words *technology education* the search engine will look for any site that has either the word *technology* or the word *education*.

3. Try searching for *"technology education"* using quotes around both words. How many Web pages did you find? _____

   This time you probably reduced the number of Web pages that you found.

   There are a number of ways to continue to decrease the number of Web pages to search. Most search engines offer search tips. For the clues below, words in "quotes" are words you enter, but words that are CAPITALIZED are words that might be found on the search engine.

   Clues: "Technology Education"
   technology +education

   SEARCH
   +"Technology Education" -"educational technology"
   then SEARCH WITHIN THESE RESULTS
   -engineering
   then SEARCH WITHIN THESE RESULTS
   -"instructional technology"

Search on Your Own
Try a few of these search strategies.

4. Take about 15 minutes to write down the URL's (Uniform Resource Locators) or Web site addresses of sites that look like they could be about college programs in technology teacher education. Write the titles or school names of the site also. If you go to the home pages of good sites, then **bookmark** them with your browser. **Do not** actually browse through the site right now. You still need to identify more links and Web sites before you actually browse them.

URL: _____
Title: _____

URL: _____
Title: _____

URL: _____
Title: _____

Search 1.2: ITEA Search

The International Technology Education Association is the professional organization for teachers, supervisors, professors and college students. It often is referred to as, "ITEA." You might find the ITEA Web site indirectly through another site that is linked to the ITEA, or you might be able to find it directly through a search.

5. Find the ITEA on the World Wide Web. Write its URL or Web site address for future reference.

   _____

6. The ITEA has a large Web site. It has a lot of Web pages that cover a lot of different topics. Identify something on the ITEA home page that will allow you to browse the Web site more easily. Write what it is.

   _____

   Clue: When you are lost, stop and ask for *direc*tions.

   Did you write *Site Directory*? The ITEA has a *site directory*.

   Click on the Site Directory link and look through the long list of links on the directory. Remember, you are looking for a great way to find technology education college programs.

   Clue: If you are looking for information on colleges, you probably want to *get a degree*.

7. Did you find a page with a lot of colleges listed as links? If not, keep searching the ITEA Web site. When you find this page, **bookmark** it, write the URL and title of the ITEA page.

URL: _____
Title: _____

You might also find the Council on Technology Teacher Education (CTTE) Web site through the ITEA's site directory. It could prove useful.
URL: _____
Title: _____

Search 1.3: TSA and TECA Searches
Find the official Web site of the Technology Student Association. Once you find the site, use the clue below to guide you.

Clue: *Teaching* is a rewarding *career.*

Remember you are trying to find the best terms and locations to use in gathering information about technology teacher education programs.

8. Did you find the official TSA Web site? What did you find at that site? If you did not find a large list of links to technology teacher education programs, you should keep searching. **Bookmark** the location. Write the URL and title of the TSA page that is the best for identifying places to search.
   URL: _____
   Title: _____

Conduct a search for TECA Web sites. If you use some good search strategies, you will get good results and you will want to save the search as a file.

9. Did you find some TECA Web sites? **Bookmark** the locations. Write the URL's and titles of the TECA pages that look the best for identifying teacher education programs.

   TECA URL's or Search File Names:

   _____
   _____
   _____

Search 1.4: Category/Geographic Location Search
If you were able to find those important ITEA and TSA Web pages that are full of links to college programs, then you know that there were a lot of links. It's almost too many to look through.

What if you want to go to college within a certain area of the country? You could do a search for programs within a geographic area. Here is what you should do.

In the *Address* or *Location* window of your browser, input the following URL. *http://www.yahoo.com/* Yahoo is a search engine that allows category searches. If Yahoo is not available, use a similar search engine.

Do not search yet. Click on the link that matches this clue.
Clue: You go to school to get one of these.

Do not search yet. Click on the link that matches this clue.
Clue: It is *higher* than high school.

Do not search yet. Click on the link that matches this clue.
Clue: These two words are synonyms for higher education.

Choose the country where you want to go to college, or
choose the state/province where you want to go to college…

Enter the terms to search, but instead of searching *"all of Yahoo,"* search *"just this category."*

10. If you find a technology teacher education program in the area of the country you want to attend, you should bookmark the site and write the title and URL.
    URL: _____
    Title: _____

Search by category such as geographic location.

Days 2, 3, and 4: Your Second Mission
Using the World Wide Web, your second mission is to:

- Get an idea of the types of activities and courses that college students take in technology education,
  - Gather the information you need to enroll in a technology education program at your favorite college, and
  - Make contact and ask questions of a university professor if needed.

Problem 2
It's almost time to visit technology teacher education program Web sites that you have identified.

The better Web sites will include photographs of the college students doing activities and working on TECA competitions even if they are not at schools you want to attend.

Solving Problem 2
Perhaps the best way to solve the problem of how to collect information on technology teacher education programs is to organize your log or notebook ahead of time.

Organize each big section of your notebook by *University Programs*.

Under each university program you might decide to organize by program components. Your teacher may have explained that most technology teacher education programs require four types of courses: general education courses, professional courses, student teaching, and technological courses. Technological courses provide the same kind of technology content that you learn in technology education.

You should not write down all of the courses that are offered by a program, but you should check to see that the program offers the four types of courses mentioned above. A good program might also offer a TECA chapter.

You should make a checklist in your notebook.

Further prepare the organization of your notebook by adding additional categories. For example, you might prepare to list one college course or activity from each system of technology such as:

- communication and information technology;
- production, materials, and biological technology; and,

- transportation and other physical technology.

You should leave space to write down comments and questions about the courses and activities that you learn about on the Web site.

Some really important information that you will want to collect from the Web site is how to contact the professors who teach in the program. Determine ways to contact professors over the World Wide Web or with email over the Internet. Organize a place to write this information.

You will also want to collect admission requirements, financial aid information, and see if the university offers scholarships. Collect this information by visiting the university admission Web site. Do not ask professors for this information unless you still have questions after contacting the university admissions office.

Finally, you will want to provide additional organization in your notebook for other things that matter to you such as where the university is located, how much money the university charges for tuition, facts about the sports program, and the cost of room and board.

Below is an example of what your notebook outline might look like so far. It could be a checklist and a reference for information.

Technology Education as a Career: Electronic Scavenger Hunt

- *Technology Education at _____ University*
  - *General Courses* *Yes* *No*
  - *Professional Courses & Student Teaching* *Yes* *No*
  - *Technological Courses* *Yes* *No*
  - *TECA* *Yes* *No*
- *Communication / information technology*
  Comments and questions:

  _____

  _____

- *Production / construction / manufacturing / biological technology*
  Comments and questions:

  _____

  _____

- *Transportation and other physical technology*
  Comments and questions:

  _____

  _____

- *Professors to contact:* _____
- *Email addresses of professors or form page URL*

  _____
- *Admissions URL & Information* _____
  - *Application deadline* _____
  - *Grade point average* _____
  - *SAT or ACT scores* _____
  - *High school courses required* _____
- *Financial Aid URL and Scholarship* _____

Make a similar outline for each program Web site that you plan to visit.

Continue Your Electronic Scavenger Hunt

Using the Web site locations that you identified and your notebook outlines, *continue your electronic scavenger hunt* for information on the technology teacher education programs that look interesting to you.

Email

If you see email buttons or form pages on the program Web sites, then you can write to the professors if needed, and ask them the specific questions and share specific comments that you developed while browsing the sites.

Be sure that you remind yourself to not only collect the information in the outline, but also get to know the program in general.

11. After visiting a few technology teacher education Web sites, what conclusions did you reach about technology teacher education? You should ask yourself what are those things that you liked most about the programs that you visited. Write down those things for your reference.

    _____

    _____

    _____

12. For at least three of your favorite programs, list those things that were similar to the assignments and activities that you are doing in your high school technology education class and in TSA.

    _____

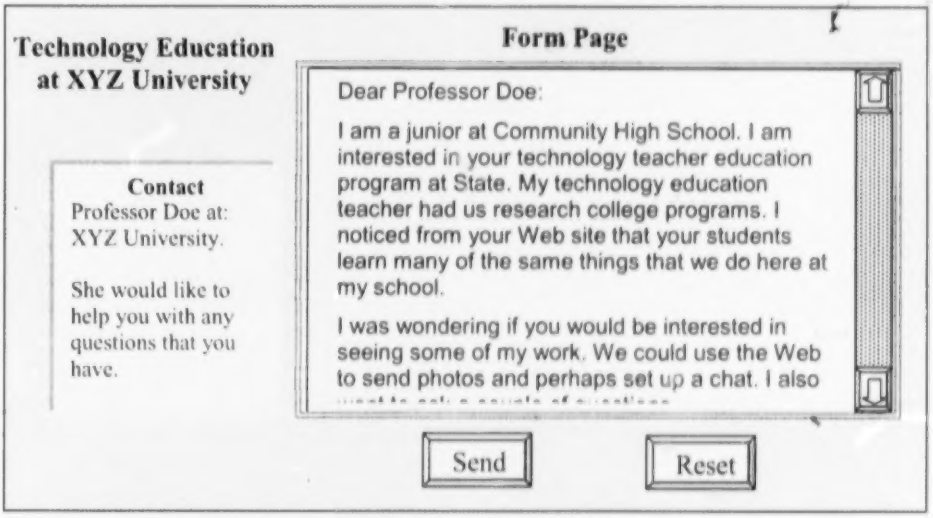
    _____

    _____

    _____

    _____

    _____


Technology Education at XYZ University
Form Page
Contact
Professor Doe at: XYZ University.
She would like to help you with any questions that you have.
Dear Professor Doe:
I am a junior at Community High School. I am interested in your technology teacher education program at State. My technology education teacher had us research college programs. I noticed from your Web site that your students learn many of the same things that we do here at my school.
I was wondering if you would be interested in seeing some of my work. We could use the Web to send photos and perhaps set up a chat. I also
Send
Reset

Days 4 and 5: Your Third Mission

Only if you are ***serious*** about enrolling, using the World Wide Web, your third mission is to:

- Share examples of your work with professors. Develop a dialogue with professors at technology teacher education programs of interest to you.

Problem 3

Your teacher will help you learn how to use email to include attachments. He or she might also teach you how to set up a one-to-one chat with professors at a few of your favorite technology teacher education Web sites.

Professors may take a few weeks to respond to the original email that you sent during your previous electronic scavenger hunt mission. You might also want to correspond with the TECA president at that program.

What to Share with Professors and University Students

Remember, you will want to show the university professors and students how well you have achieved in technology education and in your other classes.

Show and explain your work on the:

- TSA Cyberspace Pursuit competition or other TSA activities,
- Technology education communication technology class,
- Communication-related projects in other technology education classes such as multimedia presentations, gif and jpg photographs of projects, digital video of working models, Web pages, reports and other documents that demonstrate your achievement in technology, and

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- Other school assignments that demonstrate your achievement in other classes.

Conclusions

You should let your teacher know what you have learned from the World Wide Web Technology Education Career Activity. Answer the following questions.

13. What technology teacher education programs did you find interesting?

_____
_____
_____

14. Which professors did you contact over the World Wide Web?

_____
_____
_____

15. Generally, what was some of the class work that you shared with the professors?

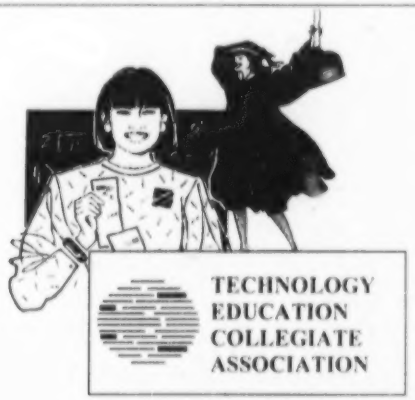
_____
_____
_____

16. Did you make up your mind whether or not you will enroll in a technology teacher education program? Why or why not?

_____
_____
_____

17. If you are considering technology education as a career, what college or university will you probably attend?

_____
_____
_____



Answer Sheet

You should use this answer sheet to record the answers to the questions listed in the activity booklet. Make separate pages in your notebook or start a log that will help you record additional information that will be collected in your scavenger hunt on the World Wide Web.

Good Search Terms.

_____ _____
_____ _____
_____ _____

Confusing Terms.

_____ _____
_____ _____
_____ _____

1. Search for the word *technology*. How many Web sites/pages did you find? _____

2. How many Web pages do you find when you search for the words *technology education*? _____

3. Try searching for *"technology education"* using quotes around both words. How many Web pages did you find? _____

4. Technology teacher education program URL's and titles.

   URL: _____
   Title: _____

   URL: _____
   Title: _____

   URL: _____
   Title: _____

5. Write the ITEA URL or Web site address for future reference.
   _____

6. Identify something on the ITEA home page that will allow you to browse the Web site more easily. Write what it is. _____

7. Write the URL and title of the ITEA page with a lot of colleges listed as links.
   URL: _____
   Title: _____
   List the CTTE URL and page title if you located their site.
   URL: _____
   Title: _____

8. Write the URL and title of the TSA page that is the best for identifying places to search.
   URL: _____
   Title: _____

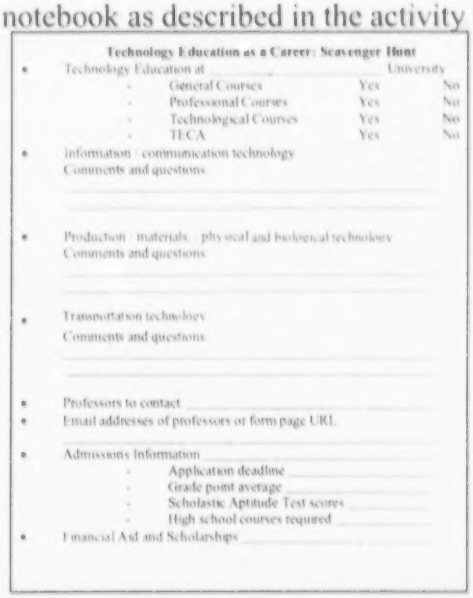
9. Write the URL's and titles of the TECA pages that look the best for identifying teacher education programs.

   TECA URL's or Search File Names:

   _____
   _____
   _____

10. Write the title and URL of a technology education program in your area of the country.
    URL: _____
    Title: _____

Develop your log or notebook as described in the activity booklet.



Technology Education as a Career: Scavenger Hunt

- Technology Education at _____ University
  - General Courses Yes No
  - Professional Courses Yes No
  - Technological Courses Yes No
  - TECA Yes No
- Information / communication technology
  Comments and questions
- Production / materials / physical and biological technology
  Comments and questions
- Transportation technology
  Comments and questions
- Professors to contact _____
- Email addresses of professors or form page URL
- Admissions Information _____
  - Application deadline _____
  - Grade point average _____
  - Scholastic Aptitude Test scores _____
  - High school courses required _____
- Financial Aid and Scholarships _____

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11. Write down any conclusions or opinions you developed about technology teacher education.

12. List those things that were similar to the assignments and activities that you are doing in your high school technology education class and in TSA.

13. What technology teacher education programs did you find interesting?

14. Which professors did you contact over the World Web Web?

15. Generally, what was some of the class work that you shared with the professors?

16. Did you make up your mind whether or not you will enroll in a technology teacher education program? Why or why not?

17. If you are considering technology education as a career, what college or university will you probably attend?

Prerequisite Lesson Plan: Use Only If Needed

Searching the Web: Technology Education as a Career

Note: This search lesson has been supplied with the electronic version of the *Technology Education as a Career* materials and is intended to guide your lesson planning only if your students have no experience in searching for Web sites using search engines on the World Wide Web. Use this lesson only after you have reviewed *Technology Education as a Career* and still believe that your students need the training. This is not the MAIN lesson plan for *Technology Education as a Career*.

Audio/Visuals
Overhead transparency: Searches and Hyperlinks (use where appropriate).

Resources
In your lab, the school library, or school computer lab obtain one computer for each student or student pair. The computer(s) should have an Internet connection and a Web browser to help you navigate among various search engines.

Objectives
I. Learn how to use a search engine to search for Web sites on the World Wide Web.

Review & Focus
Relate the upcoming lesson and activity to other experiences that students may have had on the computer. Ask some questions that sample the student's understanding of the related past instruction. For example, students may have used a Web browser to visit special Web sites in the past.

Explain that students will soon search the Web in order to learn more about technology education as a career, and you will want them to understand how to efficiently search for good Web sites. In the past, the teacher may have specified the Web sites, but this time students will be finding the Web sites.

Teacher Presentation

Introduction

Preview of the different search engines.

1. Determine the universal resource locators (URLs) for two or three popular search engines.
2. Show students how to enter and bookmark the URL's and access the search engine sites.

General Tips (features that many search engines have in common)

1. Quotation marks: Enclosing words or phrases in quotation marks tells the search engine to list only sites that contain those words in that exact order (e.g. "Aerodynamic Vehicle Design").
2. Plus and minus signs: A plus sign (+) in front of a word indicates to the search engine that the word or phrase must appear in the results (e.g. communication +technology). A minus sign (-) indicates that the word or phrase should not appear in the results (e.g. technology -transportation).
3. Boolean operators (AND, OR, AND NOT, and parentheses): AND indicates that the results must contain all the words joined by the AND operator (e.g. technology AND education AND career). OR indicates that the results must include at least one of the words joined by the OR operator (e.g. College OR University). AND NOT implies that the word followed by this operator cannot appear in the results (e.g. technology AND NOT computers). Parentheses allow the grouping of Boolean queries together for more complicated queries (e.g. career AND (teacher OR professor)).
4. Title search: Enables the search to be restricted to the title portion of Web documents (e.g. title:Technology Education or t:Technology Education).
5. Use more than one word in your search. The search should be based on ideas and concepts, instead of just keywords.
6. Use descriptive, specific words in your search.

Student Practice
Prior to letting students work independently, you may want to have all of your students access one search engine that you used ahead of time. Have the students search for the same Web sites that you searched. Use the same terms that both worked and did not work for you. Have students try each of the six techniques above. Finally, have students visit and bookmark a few of the sites that were listed in their search results.

Evaluation
You will likely not decide to make this a graded activity, but be sure to circulate among the students to help them enter the search terms correctly and understand why students are getting good or poor search results.

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